Howrey Docket No.02578.0006.CPUS01

IN THE CLAIMS:

Kindly amend claims 1, 23, 24, 40 and 41 and add new claims 64 and 65 as follows:

1. (Currently Amended) A system for measuring one or more properties of one or more patterned films comprising:

a light source for directing light to the one or more films;

a one-spatial-dimension[[al]] imaging spectrometer capable of imaging a film at a resolution of about 100 microns or less for receiving light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films, and determining therefrom a reflectance or transmission spectrum for one or more of the spatial locations in the pattern;

a translation mechanism for relatively translating the one or more films with respect to the spectrometer; and

a processor for (a) obtaining from the spectrometer reflectance or transmission spectra for a plurality of one dimensional patterns of spatial locations along the one or more films; (b) aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films; and (c) determining therefrom one or more properties of the one or more films.

2. (Original) The system of claim 1 wherein the spectrometer is configured to provide resolution of 1 mm or better along both first and second spatial dimensions.

3. (Original) The system of claim 1 wherein the reflectance or transmission spectra for the area has spatial resolution of 1 mm or better.

4. (Previously presented) The system of claim 1 in which the translation mechanism is configured to move a platform supporting the one or more films relative to the spectrometer or the spectrometer and light source.

5. (Previously presented) The system of claim 1 in which the translation mechanism is configured to move the spectrometer or spectrometer and light source relative to a platform supporting the one or more films.

6. (Previously presented) The system of claim 1 where the processor is configured to determine the one or more properties of the one or more films at one or more desired measurement locations.

7. (Original) The system of claim 6 wherein the processor is configured to locate the one or more desired measurement locations at least in part by analyzing at least a portion of the reflectance or transmission spectra for the two dimensional area.

8. (Original) The system of claim 7 wherein the processor is configured to determine the one or more properties at a location by comparing a modeled reflectance or transmission spectrum with an actual reflectance or transmission spectrum at or within an area surrounding the location.

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9. (Original) The system of claim 7 wherein the processor is configured to vary one or more modeling assumptions or the location of the actual reflectance or transmission spectrum until the actual reflectance or transmission spectrum and modeled reflectance or transmission spectrum are within a predetermined tolerance.

10. (Original) The system of claim 6 wherein the processor is configured to determine film thickness at the one or more desired measurement locations.

11. (Original) The system of claim 6 wherein the processor is configured to determine an optical constant at the one or more desired measurement locations.

12. (Original) The system of claim 6 wherein the processor is configured to determine doping density at the one or more desired measurement locations.

13. (Original) The system of claim 6 wherein the processor is configured to determine a refractive index at the one or more desired measurement locations.

14. (Original) The system of claim 6 wherein the processor is configured to determine an extinction coefficient at the one or more desired measurement locations.

15. (Original) The system of claim 1 wherein the translation mechanism is integral with equipment for manufacturing semiconductor microelectronics.

16. (Original) The system of claim 1 wherein the spectrometer is configured to determine reflectance or transmission spectra for a one dimensional pattern of spatial locations in the shape of a line.

17. (Original) The system of claim 16 wherein the line is linear.

18. (Original) The system of claim 16 wherein the line is non-linear.

19. (Original) The system of claim 16 wherein the reflectance or transmission spectra for the two dimensional area is aggregated from the reflectance or transmission spectra of successive lines.

20. (Original) The system of claim 1 wherein the spectrometer is configured to communicate reflectance or transmission spectra to the processor through a wireless interface.

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21. (Original) The system of claim 1 wherein the spectrometer is configured to communicate reflectance or transmission spectra to the processor through a wireline interface.

22. (Original) The system of claim 1 wherein the spectrometer is configured to communicate reflectance or transmission spectra to the processor through one or more optical communications links.

23. (Presently amended) The system of claim 1 wherein the one-spatial-dimension[[al]] imaging spectrometer is configured to receive light reflected from or transmitted through a plurality of one dimensional patterns of spatial locations on the one or more films, and determining for each such pattern a reflectance or transmission spectrum for one or more of the spatial locations in the pattern, the spectrometer configured to provide resolution of 1 mm or better along both first and second spatial dimensions.

24. (Currently amended) A method [[for]]of measuring one or more properties of one or more patterned films comprising:

directing light to the one or more films;

providing a one-spatial-dimension imaging spectrometer capable of imaging a film at a resolution of about 100 microns or less;

receiving at the spectrometer light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films, and determining therefrom a reflectance or transmission spectrum for one or more of the one dimensional spatial locations in the pattern;

obtaining at the spectrometer reflectance or transmission spectra for additional one dimensional patterns of spatial locations on the one or more films;

aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films, and

determining therefrom one or more properties of the one or more films.

25. (Original) The method of claim 24 wherein the reflectance or transmission spectra for the area has spatial resolution of 1 mm or better.

26. (Previously presented) The method of claim 24 further comprising determining the one or more properties of the one or more films at one or more desired measurement locations.

27. (Original) The method of claim 26 further comprising locating the one or more desired measurement locations at least in part by analyzing at least a portion of the reflectance or transmission spectra for the two dimensional area.

28. (Original) The method of claim 26 further comprising determining the one or more properties at a location by comparing a modeled reflectance or transmission spectrum with an actual reflectance or transmission spectrum at or within an area surrounding the location.

29. (Original) The method of claim 28 further comprising varying one or more modeling assumptions or the location of the actual reflectance or transmission spectrum until the actual reflectance or transmission spectrum and modeled reflectance or transmission spectrum are within a predetermined tolerance.

30. (Original) The method of claim 24 further comprising determining film thickness at the one or more desired measurement locations.

31. (Original) The method of claim 24 further comprising determining an optical constant at the one or more desired measurement locations.

32. (Original) The method of claim 24 further comprising determining doping density at the one or more desired measurement locations.

33. (Original) The method of claim 24 further comprising determining a refractive index at the one or more desired measurement locations.

34. (Original) The method of claim 24 further comprising determining an extinction coefficient at the one or more desired measurement locations.

35. (Previously presented) The method of claim 24 further comprising obtaining reflectance or transmission spectra for successive one dimensional patterns of contiguous spatial locations along the one or more films in the shape of a line.

36. (Original) The method of claim 35 wherein the line is linear.

37. (Original) The method of claim 35 wherein the line is non-linear.

38. (Original) The method of claim 35 further comprising aggregating the reflectance or transmission spectra for successive lines to form the reflectance or transmission spectra for the two dimensional area.

39. (Previously presented) The method of claim 38 further comprising receiving light reflected from or transmitted through a plurality of one dimensional patterns of spatial locations on the one or more films, and determining for each such pattern a reflectance or transmission spectrum for one or more of the one dimensional spatial locations in the pattern.

40. (Currently amended) A system for measuring one or more properties of one or more patterned films comprising:

means for directing light to the one or more films;

means for receiving light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films at a resolution of about 100 microns or less, and determining therefrom a reflectance or transmission spectrum for one or more of the spatial locations in the pattern;

means for relatively translating the one or more films with respect to the [spectrometer]means for receiving; and

means for (a) obtaining from the [spectrometer]means for receiving reflectance or transmission spectra for a plurality of one dimensional patterns of spatial locations along the one or more films; (b) aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films; and (c) determining therefrom one or more properties of the one or more films.

41. (Currently amended) A method for measuring one or more properties of one or more patterned films comprising:

a step for directing light to the one or more films;

a step for providing a one-spatial-dimension imaging spectrometer capable of imaging a film at a resolution of about 100 microns or less;

a step for receiving at the spectrometer light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films, and determining therefrom a reflectance or transmission spectrum for one or more of the one dimensional spatial locations in the pattern;

a step for obtaining at the spectrometer reflectance or transmission spectra for additional one dimensional patterns of spatial locations on the one or more films;

a step for aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films, and

a step for determining therefrom one or more properties of the one or more films.

42. (Previously presented) The system of any of claims 1 or 40 wherein the one or more films comprise a film stack.

43. (Previously presented) The system of claim 42 wherein the film stack is a vertical film stack.

44. (Previously presented) The method of any of claims 24 or 41 wherein the one or more films comprise a film stack.

45. (Previously presented) The method of claim 44 wherein the film stack is a vertical film stack.

46. (Previously presented) The system of claim 40 wherein the fourth means is configured to determine the one or more properties of the one or more films at one or more desired measurement locations.

47. (Previously presented) The method of claim 41 further comprising determining the one or more properties of the one or more films at one or more desired measurement locations.

48. (Previously presented) The system of any of claims 6 or 46, wherein the one or more measurement locations are directed to different features of a patterned film.

49. (Previously presented) The method of any of claims 26 or 47, wherein the one or more measurement locations are directed to different features of a patterned film.

50. (Previously presented) The system of any of claims 6 or 46, wherein the one or more desired measurement locations are on a surface, and the reflected or transmitted light is nominally perpendicular to the surface.

51. (Previously presented) The method of any of claims 26 or 47, wherein the one or more measurement locations are on a surface, and the reflected or transmitted light is nominally perpendicular to the surface.

52. (Previously presented) The system of any of claims 6 or 46, wherein the one or more desired measurement locations are on a surface, and the reflected or transmitted light is at angle to the surface.

53. (Previously presented) The method of any of claims 26 or 47, wherein the one or more desired measurement locations are on a surface, and the reflected or transmitted light is at an angle to the surface.

54. (Previously presented) The system of any of claims 6 or 46, wherein the reflected or transmitted light is unpolarized.

55. (Previously presented) The method of any of claims 26 or 47, wherein the reflected or transmitted light is unpolarized.

56. (Previously presented) The system of any of claims 6 or 46, wherein the reflected or transmitted light is polarized.

57. (Previously presented) The method of any of claims 26 or 47, wherein the reflected or transmitted light is polarized.

58. (Previously presented) The system of any of claims 1 or 40, wherein the one or more properties relate to metal leads.

59. (Previously presented) The method of any of claims 24 or 41, wherein the one or more properties relate to metal leads.

60. (Previously presented) The system of any of claims 1 or 40, wherein the one or more properties relate to regions between metal leads.

61. (Previously presented) The method of any of claims 24 or 41, wherein the one or more properties relate to regions between metal leads.

62. (Previously presented) The system of any of claims 1 or 40, which comprises a reflectometry system.

63. (Previously presented) The system of any of claims 1 or 40, which comprises an ellipsometry system.

64. (New) A system for measuring one or more properties of one or more patterned films comprising:

a light source for directing light to the one or more films;

a one-spatial-dimension imaging spectrometer capable of imaging a film at a resolution of about 100 microns or less for receiving light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films, and determining therefrom a reflectance or transmission spectrum for one or more of the spatial locations in the pattern;

a translation mechanism for relatively translating the one or more films with respect to the spectrometer; and

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a processor for (a) obtaining from the spectrometer reflectance or transmission spectra for a plurality of one dimensional patterns of spatial locations along the one or more films; (b) aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films; (c) locating one or more measurement locations on or from the two dimensional area; and (d) determining from one or more measurements taken at the one or more measurement locations one or more properties of the one or more films.

65. (New) A method of measuring one or more properties of one or more patterned films comprising:

directing light to the one or more films;

providing a one-spatial-dimension imaging spectrometer capable of imaging a film at a resolution of about 100 microns or less;

receiving at the spectrometer light reflected from or transmitted through a one dimensional pattern of spatial locations on the one or more films, and determining therefrom a reflectance or transmission spectrum for one or more of the one dimensional spatial locations in the pattern;

obtaining at the spectrometer reflectance or transmission spectra for additional one dimensional patterns of spatial locations on the one or more films;

aggregating these reflectance or transmission spectra to obtain reflectance or transmission spectra for a two dimensional area on the one or more films;

locating one or more measurement locations on or from the two dimensional area; and

determining from one or more measurements taken at the one or more measurement locations one or more properties of the one or more films.